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Descriptions of new species of **DIURNAL LEPIDOPTERA** found within the
United States.

BY WM. H. EDWARDS.

ANTHOCARIS REAKIRTII, n. sp.

Male. Expands 1.3 to 1.5 inch. Upper side soiled white, blackish at base; primaries have a large bright orange apical patch, as in *Sara*, edged on the apex by black as in that species, with serrated black spots also upon the hind margin; a narrow, slightly bent bar from costa across the arc where it connects with a brown, curved bar from inner angle; costal edge much specked with black scales; fringe alternate white and black.

Secondaries have three or four patches of black at tips of upper nervules; fringe white, black at ends of nervules.

Under side white; the orange spots reduced and paler; costa of primaries and the whole space on apex and margin outside the orange, densely covered with green patches; on the arc a bent bar; secondaries densely and uniformly covered from base to margin by large green patches.

Female. Expands 1.7 inch. Same color as male; costal margin slightly specked; the orange spots paler and narrower, reaching from costa to hind margin, not edged by black on inner side, but on outer by a sinuous band, between which and the apical border is a white patch; the band connected with the triangular marginal spots by black nervures; on the arc a tortuous bar, in most cases starting from costal edge; beneath as in the male, except that costa, margins and secondaries are much less spotted with green.

California. From specimens in my own collection and those of Messrs. Reakirt and Henry Edwards, and Dr. Behr.

This species has been regarded as a form of *Sara*. Its distinctness was first pointed out to me by Mr. Reakirt and I have since learned that our Californian lepidopterists had assured themselves of the same thing.

The males of the two species much resemble each other on the upper side except in size, *Sara* expanding more by three or four tenths. But on the under side the present species is much more and differently marked with green. The females differ upon the upper side. I am informed by Mr. Edwards that the yellow form is wholly wanting in the smaller species, while of *Sara*, at least one-half are decidedly yellow.

PIERIS HULDA, n. sp.

Male. Expands 1.7 inch. Upper side white with a faint yellow tinge; base of wings largely covered with blackish scales which extend along the costa of primaries and the principal nervures of both wings; apex of primaries gray, with white lines in the middle of the interspaces; the nervules all more or less edged by gray scales.

Under side of primaries white, the costa, apex, and upper part of hind margin, greenish-yellow; the nervures largely edged by gray scales; secondaries greenish-yellow, covered with gray except generally in the middle of the marginal interspaces.

Body above black, the thorax covered with buff hairs; beneath, abdomen yellow, thorax grayish-yellow; palpi same; antennæ brown above, whitish below; club brown tipped with pale ferruginous.

From Kodiak, 1 ♂. Coll. of Henry Edwards, Esq., of San Francisco.

ARGYNNIS BEHRENSII, n. sp.

Male. Expands 2.2 inches. Upper side dull fulvous, much obscured at base; primaries bordered by two fine parallel lines enclosing very narrow fulvous spaces between the nervules; resting on these a series of small black crescents, each enclosing a fulvous spot; the round submarginal spots of medium size; other markings as in allied species, but lighter than in most.

Secondaries have a double marginal line enclosing large fulvous spaces; the lunules large, crescent, not quite touching each other or the line; the rounded spots small; the median row confluent, forming an unusually narrow band, much like that of *A. Hesperis*; on the arc a recurved black spot enclosing a narrow fulvous space; between the submarginal spots and median line a row of pale fulvous spots corresponding to the second silvered series beneath.

Under side: primaries light buff, at base and along the nervules pale ferruginous; on hind margin and at apex dark brown; the marginal spots sagittate, black next inner angle, deep brown above and near apex lost in the ground color; the upper five enclosing silver spaces; on the sub-apical patch three silver spots; other markings as above.

Secondaries of a deep, dense ferruginous, (much as in female *Aphrodite*) which occupies the whole wing except a narrow violet-brown space between the outer rows of spots; these are twenty-one or twenty two in number, all silvered, viz: seven submarginal, narrow, elongated, edged above by broad ferruginous crescents; a second row of seven mostly oval or pyriform; a third of five, of which the first and third are

semi-oval, the second a point, fourth and fifth streaks on the margin; both the two last rows narrowly edged with black; in the cell a round spot and a point; an oval at base of median, another at base of costal; shoulder and abdominal margin lightly silvered.

Body above fulvous; beneath, abdomen buff, thorax covered with gray-fulvous hairs; palpi fulvous; antennæ black above, fulvous below; club black, tip ferruginous.

Female. Expands 2.4 inches. Upper side of a duller shade; the marginal borders of primaries broad, black, with no fulvous spaces; the submarginal crescents heavy, enclosing very small pale fulvous spots; other markings heavier than in male.

Under side similar to male, except that primaries have the base and hind margin deep fulvous; secondaries have the same ferruginous tint with a similar violet-brown space near margin.

Taken at Mendocino, California. From 1 ♂, 1 ♀, in the Collection of James Behrens, Esq., San Francisco, to whom I take pleasure in dedicating this fine and distinct species.

MELITÆA VESTA, n. sp.

Male. Expands one inch. Upper side dull fulvous; both wings edged by broad black margins, which on primaries enclose a partly obsolete series of fulvous crescents and on secondaries a distinct series of paler color and very narrow; primaries have a submarginal row of rounded fulvous spots a little bent and met on middle of disk by a second short row from costa; beyond to base reticulated with black.

Secondaries have a submarginal series of small round or oval black spots within large fulvous spots; above these two narrow tortuous parallel lines enclosing, with the black nervures, large angular fulvous spots; thence to base as on primaries; fringes black and white.

Under side: primaries fulvous, at apex and on upper part of hind margin brownish-yellow; margin bordered by a fine, wavy brown line forming a series of narrow crescents; towards costa a second similar parallel line; the central crescent large, buff; markings of upper side repeated, the black lines near base being replaced by ferruginous.

Secondaries clouded on hind margin, costa and disk, with brown; a series of submarginal crescents enclosed between two faint brown lines; a row of brown points and beyond, the whole space reticulated by brown lines, which across the disk enclose a series of pale colored spots.

Body black above, beneath buff; palpi buff; antennæ black above buff below; club black, tip ferruginous.

Female. Expands 1.2 inch. Upper side similar to male; beneath,

primaries have the entire margin yellowish and the whole of secondaries of a lighter hue than in male, the central row of spots and those next base more white and slightly margaritaceous, as is also the central marginal crescent and two or three next outer angle.

From Texas. 2 ♂, 2 ♀. Collection of James Ridings, Esq.

MELITÆA ARACHNE, n. sp.

Female. Expands 1.6 inch. Upper side fulvous inclining to ochrey yellow, crossed by common black lines; hind margin edged by a crenated line on which rests a series of large spots, of paler shade than the ground color, edged above by a second crenated line; on primaries, these spots are somewhat indistinct; crossing the disks are two heavy, tortuous lines, enclosing with the black nervures, pale spots; on arc of primaries a subovate spot enclosed by black; in cell a wavy line and two near base; secondaries have the base and abdominal margin black; in the upper part of cell a deep fulvous sinus.

Under side of primaries yellow fulvous; the margins edged by a crenated line on which is a complete series of large white crescent spots, edged anteriorly by black, beyond these a row of indistinct whitish patches followed by a double curved line of black spots and faint lines indicating the spots and marks in the cell above.

Secondaries have also a marginal line and a series of large yellow crescents, above which is an ochrey band and a second of whitish, the latter broad, edged on both sides by broken black lines, and enclosing in the middle at either extremity parts of a third similar line; beyond this another band of ochrey yellow which projects a broad dentation into the next or third white band; this latter is heavily edged on both sides by black, and is followed by the third band of yellow; next base a white patch.

Palpi ochrey yellow; antennæ brown above, yellow beneath; club black, tip ochrey.

From Colorado, 1 ♀. Collection of Tryon Reakirt, Esq.

This species is closely allied to *M. minuta*, Edwards, of which a single male was described in Proc. Acad. Nat. Sci. Phila., 1861, and I am not certain that it may not prove to be the female of that species. Unfortunately the original specimen is not in this country nor accessible. I preserved a coarsely executed lithograph of it, from which the female above described differs somewhat, but perhaps not materially.

This, or these two species differ from any other North American Melitæas with which I am acquainted, and belong to the group of which *Cinxia* (*European*) is the type.

GRAPTA OREAS, n. sp.

Form of *Faunus*. Primaries deeply incised and emarginated; secondaries with a prominent rounded tail and a second shorter between this and anal angle.

Male. Expands 1.5 inch. Upper side deep red fulvous, color of *Faunus*, spotted with black. Primaries have a black-brown border on which rests a series of rather large yellowish lunules; a yellowish sub-apical patch beyond which is another of red-brown connecting costa with hind margin; a dark elongated patch from costa covers the arc; in cell two rounded spots and three at right angles to these, on the disk, as in *Faunus*; near inner angle a red-brown patch.

Secondaries have the border diffuse, enclosing a row of yellowish lunules; a black patch on costa and two on disk; fringes dark brown, yellow in the emarginations.

Under side very like *Progne*, in color dark brown, varied with shades of paler brown or black, slightly grey near apex; the whole surface covered with fine, abbreviated streaks of darker color; the basal space scarcely darker than disk and but partially limited on outer edge by a black line; in cell of primaries two elongated dark spots; an extra discal common row of black points; in the incision of primaries and along hind margin of secondaries faint traces of lunules such as characterise the allied species; silver spots small, narrow, bent at right angle and pointed at either end.

Body brown-fulvous; palpi black below, buff on sides, fulvous above; antennæ brown; club brown, tip ferruginous.

California, from Dr. Behr.

This species seems to me sufficiently distinct from our eastern Graptas. It connects the two groups, having the form of *Faunus* and the under surface of *Progne*. Under the name *C-album*, Dr. Behr, in his paper on Californian Lepidoptera, No. IV (Cal. Acad. Nat. Sci., 1864), describes the larva as having "a dimidiate coloration, like that of the European *C-album*, the "fore part being white, the abdominal part yellow," and as feeding on *Urtica*. I only know the larva of *C-album* from published descriptions. Westwood, in Humphrey's Brit. But., says it is "red in front with the hinder part white" and the figure given corresponds. Chenu, p. 99, says it is "reddish-brown with a white dorsal band not covering the four anterior segments, which are sometimes yellow." By which it would appear that although the coloring of the Californian species is "dimidiate," there is a difference between it and *C-album*.

The larva of *Progne* is described by Fitch, 3rd N. Y. Report, 1856, Sect. 142, as grey, "with a whitish band on the fore part of each abdominal segment."

GRAPTA SATYRUS, n. sp.

Form and size of *Comma*.

Male. Expands 2 inches. Upper side yellow fulvous; primaries have a black brown marginal border, narrower than in *Faunus*, dilated at apex; a large subapical brown spot on costa and a second covering the arc; two rounded spots in cell, a third of larger size, near inner margin, and two in median interspaces at right angles with the first; on inner margin near angle a brown patch.

Secondaries have the hind margin narrowly bordered by brown, anterior to which is an incomplete line of brown patches; two black spots at origin of median nervules; a large spot on middle of costal margin and another in the disk; fringes dark brown, white in the emarginations.

Under side marbled in shades of brown, sometimes suffused with vinous; the basal area, occupying half the wings, limited by a common flexuous line, next inside which the color is darkest; in cell of primaries two long dark spots and some patches of same hue near base of secondaries; the extra-basal space more or less tinted with yellow, much covered with fine, abbreviated, ferruginous streaks; apex of primaries yellow brown, sometimes olivaceous, enclosing three ferruginous points and limited below by a ferruginous line running back from the angle of margin; subapical patch grey, inclining to white; the marginal incision bordered by a band which is edged without by a black line, and within by a black bar which encloses a row of narrow olivaceous spots, or lunules; a submarginal row of black points, distinct at the extremities.

Secondaries have apex as in primaries; a submarginal ferruginous arc from tail to anal angle; on the margin above the tail a short border as in the incision of primaries; and below to angle a row of olivaceous lunules between which and the ferruginous arc is a yellow stripe; a row of black points as on primaries; the silver mark shaped like the letter C or G, large, open, angular below, the lower limb extended and sometimes barbed.

Body fulvous above, beneath vinous; legs pale buff, pro-legs vinous; palpi buff below, fulvous at tip and on upper side; antennæ dark brown above, buff below; club black, buff at tip.

Female. Expands 2.1 inches. Same form and on upper side same color and markings. Beneath nearly a uniform wood or olivaceous

brown, with the markings as in male but indistinct and often obsolete; silver mark more open and more slight.

Hab.—Rocky Mountains, Colorado. From several males and females in collection of Mr. Reakirt.

This species resembles *C-album* in color and markings of upper surface, being more spotted, noticeably so, on secondaries, and of a much paler color, than *Comma*, while it more resembles this last in markings of under side. *C-album* is however a Protean species, sometimes even in all respects coming very near *Faunus*. But in a series of specimens, in my possession, part of which were sent me by Mr. H. W. Bates as exhibiting variations, most differ decidedly from any American form known to me. Our several species of *Grapta*, though closely allied to each other, keep up their distinctive characters. The series including *C-album* would run thus: *Interrogationis*, *Umbrosa* (Lintner), *Comma*, *Satyrus*, *C-album*, *Faunus*, and with an interval, that is, in another group, *Oreas*, *Progne*, *Gracilis*. I have never seen reason to believe *C-album* to be an American species. Authors have applied that name to *Comma* and to *Faunus*. As to the Californian species (*Oreas*) above described, if the larva did not appear to be dissimilar, I do not think such a form could be included among the aberrations of even so variable a species as *C-album*.

CÆNONYMPHA KODIAK, n. sp.

Male. Expands 1.5 inch. Upper side light brown with a grey shade, the whole surface having a silky gloss and appearing either brown or grey according to the point of view; a common whitish bar, caused by the transparency of the wings.

Beneath, from base to beyond middle of wings brown with grey scales on primaries and blue-grey on secondaries; this space edged by a common band of pure white; thence to margin pale brown with a whitish or bluish grey tint as viewed.

Body above brown; beneath, thorax covered with blue-grey hairs; palpi blue grey; antenæ annulated brown and white.

From Kodiak. 1 ♂. From collection of Henry Edwards, Esq.

CÆNONYMPHA BRENDA, n. sp.

Male. Expands 1.4 inch. Upper side light buff, immaculate. Under side a shade more yellow; primaries have a faint, transverse, reddish line beyond the cell, commencing at sub-costal, thence straight to upper median, after which it is tortuous and disappears near lower median. Secondaries have a similar line angular to end of cell thence tortuous to abdominal margin; primaries have a large sub-apical round

black spot and a point in lower median interspace; secondaries have a submarginal row more or less complete of small spots or points.

Body and legs light buff; antennæ buff, club pale ferruginous.

Female. Expands 1.5 inch. Upper side like male; beneath the apex of primaries and space within the discal lines much obscured by grey; the sub-apical spot large, enclosing a white point; spots on secondaries partly wanting.

Var. a, Male. The under side showing no trace of spots except the sub-apical, which is faint.

From Los Angeles, Cala., 2 ♂, 1 ♀. Collection of Tryon Reakirt, Esq.

THECLA CHALCIS, n. sp. Behr in lit.

Male. Expands 1.2 inch. Upper side castaneous; stigma small, black, sub-ovate; secondaries have a short black tail; fringes brown, black at anal angle and between this and the tail whitish.

Under side dead leaf brown, greyish next base; both wings have a submarginal row of obsolete points, the three next anal angle alone being clearly visible without a glass; the first from angle surmounting a faint grey space; across the disks a row of faint brown spots indistinctly edged without by whitish; thorax beneath grey; antennæ black annulated with white; club black above, ferruginous below, tip ferruginous.

Female not known.

California. From a single specimen in collection of Dr. H. Behr.

LYCÆNA ORCUS, n. sp.

Male. Expands 1.1 inch. Upper side pruinose blue, paler on costa of primaries; hind margins broadly fuscous; fringes long, cinereous.

Under side grey cinereous, bluish at base; on arc of primaries a narrow black bar bent outwards, and faintly edged without by white; on secondaries a faint discal streak; both wings have a submarginal line of points, scarcely discernible.

Beneath, thorax covered with blue grey-hairs, abdomen grey; palpi white above at base, black at tip, and cinereous below; antennæ black annulated with white; club black, tipped with cinereous.

From a single specimen in the collection of Henry Edwards, Esq., of San Francisco. This species differs from all other American *Lycænidae* that I have seen by the absence of decided markings on the underside, the usual discal row being wanting, and the submarginal scarcely to be distinguished without a glass.